Five-Year Review Report

First Five-Year Review Report
for
Midway Landfill Site
Kent, Washington

Final

September 19, 2005

Prepared By
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Acronyms and Abbreviations

AGI	AGI Technologies
CAP	Cleanup Action Plan
CERCLA	Comprehensive Environmental Response Compensation Liability Act
City	City of Seattle
COCs	contaminants of concern
DCA	Dichloroethane
DCE	Dichloroethene
EA	Endangerment Assessment
Ecology	Washington State Department of Ecology
EPA	Environmental Protection Agency
FS	Feasibility Study
HDPE	high-density polyethylene membrane
MCLs	Maximum Contaminant Levels
MTCA	Model Toxics Control Act
NCP	National Contingency Plan
NGA	Northern Gravel Aquifer
NPL	National Priorities List
O&M	Operations and maintenance
PCE	Tetrachlorethene
PQL	Practical quantification limit
RCRA	Resource Conservation and Recovery Act
RCW	Revised Code of Washington
RI	Remedial investigation
ROD	Record of decision
ROW	Right of way
SA	Sand Aquifer
SG/SR	Shallow Groundwater/Saturated Refuse
SGA	Southern Gravel Aquifer
TCE	Trichloroethene
TCA	Trichloroethane
UGA	Upper Gravel Aquifer
USEPA	U.S. Environmental Protection Agency
VOCs	Volatile organic compounds
WAC	Washington Administrative Code
WSDOT	Washington State Department of Transportation

Executive Summary

The purpose of this periodic review is to determine whether the cleanup remedy at the City of Seattle's Midway Landfill Superfund site in Kent, Washington continues to be protective of human health and the environment. The review focuses on answering three questions. The answers to these questions are summarized below.

Question A: Is the remedy functioning as intended by the decision documents?

- The remedy has greatly reduced impacts, but it has not brought the landfill into compliance with respect to 1,2-dichloroethane and vinyl chloride in one upgradient well and four downgradient wells. Manganese exceeds the cleanup level in one downgradient well. The sources of these contaminants are the waste placed in the landfill and upgradient off site.

- Fluid levels in most of the SG/SR wells have continued to substantially decline over the past five years, demonstrating the continuing effectiveness of engineering controls.

- Concentrations of Record of Decision (ROD) contaminants of concern (COCs) in the SGA have generally remained stable or decreased over the past five years, although levels of some COCs remain above cleanup levels (1,2-dichloroethane and vinyl chloride in one upgradient well and four downgradient wells and manganese in one downgradient well).

- The SGA does not serve as a current source of drinking water and institutional controls prohibit future drinking water uses. Therefore, despite the existing levels of contaminants, the remedy continues to be protective of human health and the environment.

- Upgradient sources of VOCs in groundwater continue to be present and will limit the potential for the COCs in the SGA to decrease below the ROD cleanup levels. Vinyl chloride is a daughter product of the ethenes and ethanes detected in upgradient wells, and both vinyl chloride and 1,2-dichloroethane are also present upgradient of the landfill.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy still valid?

The exposure assumptions, toxicity data, and remedial action objectives used at the time of the remedy selection are still valid. The cleanup levels established for the site in the ROD are still appropriate and protective considering the current and likely future use of the site. There have been no regulatory or statutory changes that would call into question the protectiveness of the remedy.

The clean up levels selected in the ROD are also still valid. However, because of changes to the Model Toxics Control Act (MTCA) regulations, the vinyl chloride ground water cleanup level is updated to reflect revisions to the state cleanup levels. The cleanup level for vinyl chloride was established at the state MTCA level of 0.02 µg/L instead of the federal maximum contaminant level of 2 µg/L. The Record of Decision specified the state cleanup standard of 0.02 µg/L with the caveat that the practical quantification limit of 0.2 µg/L would be used as an alternative because the cleanup level was lower than the practical quantification limit.

Revisions to the MTCA implemented in 2001, changed the requirements for developing ground water cleanup standards (Washington State Department of Ecology, 2001a, b; respectively). The MTCA regulations require adjustment of concentrations based on applicable state and federal law to the $1E^{-5}$ risk level.

The revised state cleanup level for vinyl chloride is 0.29 µg/L, using the MTCA adjusted cancer risk of $1E^{-5}$.

With the change of the vinyl chloride state cleanup standard from 0.02 to 0.29 µg/L, the use of the practical quantification limit of 0.2 µg/L as an alternative cleanup is no longer relevant.

The revisions to the vinyl chloride cleanup standard as described above are agreed upon by the City of Seattle and the Washington Department of Ecology. The City of Seattle will issue a revision to Midway Landfill Monitoring Plan (Parametrix 2000a) to document the history of changes to the cleanup

standards for vinyl chloride. The new vinyl chloride standard will be utilized in future evaluations of ground-water conditions at the Midway Landfill.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

The presence of low concentrations of 1,2-dichloroethane and vinyl chloride in one upgradient and four downgradient wells in the Southern Gravel Aquifer is of concern. In addition, other volatile organic compounds have also been detected upgradient of the landfill. The Washington Department of Ecology will be contacting the owners of properties in the vicinity of the upgradient sources to encourage the property owners to voluntarily investigate and cleanup any contamination that may affect the landfill.

At the request of the US EPA, 1, 4 dioxane testing, will be conducted during the next sampling event at upgradient monitoring wells 17B and 21B in the Sand Aquifer and a third well, MW-14, a downgradient well in the Southern Gravel Aquifer. Well 21B has shown a slight, but steady increase over time of volatile organic compounds. Well 17B has shown a decrease in concentration over time for volatile organic compounds. This is a precautionary step advised by the US EPA for all sites undergoing 5-year periodic review where certain other solvents are present.

The Washington Department of Transportation, in cooperation with the City of Seattle and the Washington Department of Ecology will be expanding Interstate 5 into the highway right-of-way on the eastern side of the landfill. Investigations of the refuse in the right-of-way show that this expansion will not adversely affect the landfill. Gas probes in this portion of the landfill have been devoid of any gases for the past several years. These gas probes will be abandoned prior to expansion of the interstate.

The City of Seattle will to continue to operate and maintain remedial systems, including access controls, constructed under the consent decree. In addition, the monitoring programs will need to continue in compliance with the approved monitoring plan. This includes continuing the fluid elevation monitoring program, groundwater chemistry monitoring program, and landfill gas monitoring program in accordance with the Monitoring Plan, and evaluate the results on an ongoing basis.

Specific recommendations and follow-up actions include:

- Annually assess the results of the ongoing monitoring program to determine if additional work is needed.
- During the next schedule ground-water sampling round, test for 1,4, dioxane at monitoring wells 14B, 17B and 21B. If 1,4-dioxane is not detected, and then discontinue testing for this compound. If detected, however, the monitoring program will be adjusted to monitor the trend of this compound.
- Reassess the scope of monitoring on a 5-year interval depending on monitoring results.

Change the cleanup level for vinyl chloride from 0.2 µg/L to 0.29 µg/L.

Periodic Review Summary

SITE IDENTIFICATION		
Site Name *(from WasteLAN)*: Midway Landfill		
EPA ID *(from WasteLAN)*: WAD WAD 980638910		
Region: 10	State: WA	City/County: Kent/King
SITE STATUS		
NPL status: ☒ Final ☐ Deleted ☐ Other (specify)		
Remediation status (choose all that apply): ☐ Under construction ☒ Operating ☐ Complete		
Multiple OUs?* ☐ yes ☒ no	Construction completion date: 2000	
Has site been put into reuse? ☐ yes ☒ no		
Review Status		
Lead Agency: ☐ EPA ☒ State ☐ Other Federal Agency _____		
Author Name: Ching-Pi Wang		
Author Title: Remedial Project Manager	Author Affiliation: WA State Dept. of Ecology	
Review Period: January 2005 to September 2005		
Dates of site inspection: May 2, 2005		
Type of Review: x Post-SARA ☐ Pre-SARA ☐ NPL – Removal Only ☐ Non-NPL Remedial Action Site ☒ NPL State/Tribe-lead ☐ Regional Discretion		
Review Number: x First Second ☐ Third ☐ Other (specify)		
Triggering Action: ☐ Actual RA on-site Construction at OU# _____ ☐ Actual RA Start at OU# _____ ☐ Construction Completion Previous Five-Year Review Report x Other (ROD issuance date)		
Triggering action date *(from WasteLAN)*: September 6, 2000		
Due date *(five years after triggering action date)*: September 6, 2005		

* ["OU" refers to operable unit.]

1.0 Introduction

The purpose of this periodic review is to determine whether the cleanup remedy at the City of Seattle's Midway Landfill Superfund Site continues to be protective of human health and the environment.

The Midway Landfill was placed on the National Priorities List (NPL) in May, 1986. It is a state-lead site. The Washington State Department of Ecology (Ecology) is responsible for the oversight management of the site as stipulated by an agreement with Region 10 of the Environmental Protection Agency (EPA). The cleanup is managed by Ecology under the authority of the Model Toxics Control Act [Chapter 70.105D RCW], the Water Pollution Control Act [Ch. 90.48 RCW], and all other applicable state and federal laws.

WAC 173-340-420 provides for periodic review of post-cleanup conditions at sites where institutional controls are required as part of the cleanup action. Institutional controls are required at the landfill because waste is contained on site.

Reviews must be conducted at least every five years after the initiation of the cleanup action. Because most of the cleanup action at this site occurred prior to the ROD, and thus the ROD did not require further construction, the ROD signature date is the trigger for the CERCLA five year review at this site. This review has been conducted by the Toxics Cleanup Program, Northwest Regional Office, Washington State Department of Ecology.

2.0 Site Chronology

September 2005	First 5-year review completed by Washington State Department of Ecology and the EPA.
September 2000	EPA completes a Record of Decision.
1991	Landfill cap and cover system construction completed
1990	Consent decree between Ecology and City of Seattle
1989	Landfill cap and cover system designed and construction started
September 1988	City of Seattle and Washington Department of Ecology sign Response Order on Consent.
May 1986	Landfill Placed on National Priorities List.
October 1984	Landfill nominated to the National Priorities List.
1985	Removal action begun to extract migrating landfill gases.
1984	Methane gas discovered in surrounding residential area.
Fall 1983	City of Seattle closed the landfill.
1966-1983	Site leased by City of Seattle for use as a landfill.
1945-1968	Site operated as a gravel pit.